

### **ABSTRACT OF THE DISCLOSURE**

A cryogenic fuel tank adapted for attachment to an aerospace vehicle includes an exterior layer of reinforced composite insulating foam. The insulating foam is reinforced with an aramid fiber mesh or a closed cell foam may be reinforced with 5 one or more of carbon nanotubes, graphite whiskers, silicon carbide fibers or graphite fibers. The improved composite insulating structure disclosed herein provides a remedy for insulating material breaking off the large external fuel tank attached to the space shuttle during launch and ascent into space.